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EXAMINER				
PIZZALI, JEFFREY J				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/884,487

Applicant(s)

PARK, JIN-HO

Examiner

Jeff Piziali

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 12, 13 and 16-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 10, 12, 13 and 16-24 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/130,005.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 August 2008 has been entered.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/130,005, filed on 6 August 1998.

Drawings

3. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the figures.

Specification

4. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 10, 12, 13, and 16-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Independent claim 10 recites, "*a first rectifier circuit connected to the primary coil to generate a first DC output voltage and disconnected from the first secondary coil*" (see lines 7-9).

Such "*disconnection*" (i.e., to sever or terminate a connection) subject matter was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Independent claim 10 also recites, "*a transformer including a primary coil and a first secondary coil*" (see line 3).

In contrast, the specification requires, "*The multiple output DC/DC voltage converter comprises a transformer having a primary coil applied with the input DC voltage and **at least two more secondary coils***" (see page 5, line 10).

Original claim 1 recited, "*a multiple output DC/DC converter which induces a transformer, receives a DC input voltage and generates main supply voltage from a primary coil of the transformer and at least two more auxiliary supply voltages from a secondary coils of the transformer wherein, the main supply voltage is used as the data supply voltage, the auxiliary supply voltages are used as the gate on voltage and a gate off voltage.*"

The instant claim recites a single secondary coil (see line 3). Such subject matter was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. with a single secondary coil.

7. Claims 10, 12, 13, and 16-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claim 10 recites, "*a first rectifier circuit connected to the primary coil to generate a first DC output voltage and disconnected from the first secondary coil*" (see lines 7-9).

Such "**disconnection**" (i.e., to sever or terminate a connection) subject matter was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claim 10 also recites, "*a transformer including a primary coil and a first secondary coil*" (see line 3).

In contrast, the specification requires, "*The multiple output DC/DC voltage converter comprises a transformer having a primary coil applied with the input DC voltage and **at least two more secondary coils***" (see page 5, line 10).

The instant claim recites a single secondary coil (see line 3). Such subject matter was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention with a single secondary coil.

8. Claims 10, 12, 13, and 16-18 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

The specification requires, "*The multiple output DC/DC voltage converter comprises a transformer having a primary coil applied with the input DC voltage and **at least two more secondary coils***" (see page 5, line 10).

*"A transformer having a primary coil applied with the input DC voltage and **at least two more secondary coils**," is critical or essential to the practice of the invention, but not included in the claims is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).*

The instant Abstract of the Disclosure states, *"The multiple output DC/DC voltage converter generates a main supply voltage and **at least two more auxiliary supply voltages**... the auxiliary supply voltages are used as the **gate on voltage** and the **gate off voltage**... The gate on voltage and the gate off voltage are provided to the gate driver... The multiple output DC/DC voltage converter comprises a transformer having a primary coil applied with the input DC voltage and **at least two more secondary coils**"* (see Page 18).

The Summary of the Instant Invention further states, *"Another object of the invention is to the voltage generator which can **obtain multiple output voltages as well as the main power supply** with high efficiency, combining the choke method with the fly-back method... The multiple output DC/DC voltage converter generates a main supply voltage and **at least two more auxiliary supply voltages**. The main supply voltage is used as the data supply voltage which requires a significant amount of the power in the LCD and the **auxiliary supply voltages** are used as the **gate on voltage** and the **gate off voltage**... In accordance with the present invention, the main supply voltage uses the constant voltage obtained from the primary coil of the transformer, the auxiliary supply voltage uses **at least the two more constant voltages from the secondary coils of the transformer**, and accordingly, the multiple output voltages are supplied to the LCD. Further, the multiple output DC/DC voltage converter in accordance with the present invention generates the main supply voltage with high efficiency directly obtained from*

*the primary coil, and, together with the **auxiliary supply voltages obtained from the secondary coils**, the main supply voltage with the high efficiency is supplied. That is, the DC/DC voltage converter provides the **multiple output voltages** and the main supply voltage with the high efficiency simultaneously"* (see Pages 4-6).

At least, "a transformer having a primary coil applied with the input DC voltage and **at least two more secondary coils**," is critical or essential to the practice, operation, structure, and benefit of the invention, but not included in the claims is not enabled by the disclosure.

9. Any remaining claims are rejected under 35 U.S.C. 112, first paragraph, as being dependent upon rejected (or canceled) base claims.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 10, 12, 13, and 16-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. The term "**DC**" in claim 10 (in lines 7 and 11) is a relative term which renders the claim indefinite. The term "**DC**" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For example:

It would be unclear to one having ordinary skill in the art what the term/abbreviation "**DC**" is intended to represent. Digital Camera? DREAMCAST (TM)? Data Center?

13. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999).

The term "**disconnected from**" in claim 10 is used by the claim to arguably mean (the examiner must guess here, as no claim construction guidance is provided by the specification) "**not directly physically connected to**", while the accepted meaning is, "**to sever or terminate a connection.**" The term is indefinite because the specification does not clearly redefine the term. In fact, the specification does not anywhere include the term, "**disconnected from.**"

14. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "**an externally provided DC input voltage**" (in lines 3-4). For example:

It would be unclear to one having ordinary skill in the art to what claim element the "**DC input voltage**" is intended to be "**externally provided.**" External to the apparatus? Or external to the input voltage port? Or external to the primary coil?

15. The term "**DC**" in claim 17 (in line 4) is a relative term which renders the claim indefinite. The term "**DC**" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For example:

It would be unclear to one having ordinary skill in the art what the term/abbreviation "**DC**" is intended to represent. Digital Camera? DREAMCAST (TM)? Data Center?

16. Claim 18 recites the limitation "*An apparatus according to Claim 14*" (in line 1). There is insufficient antecedent basis for this limitation in the claim.

17. Claim 18 recites the limitation "*the primary coil*" (in line 3). There is insufficient antecedent basis for this limitation in the claim.

18. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "*an externally provided DC input voltage*" (in lines 3-4). For example:

It would be unclear to one having ordinary skill in the art to what claim element the "**DC input voltage**" is intended to be "*externally provided*." External to the apparatus? Or external to the input voltage port? Or external to the primary coil?

19. The term "**DC**" in claim 18 (in line 4) is a relative term which renders the claim indefinite. The term "**DC**" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For example:

It would be unclear to one having ordinary skill in the art what the term/abbreviation "**DC**" is intended to represent. Digital Camera? DREAMCAST (TM)? Data Center?

20. Claim 19 recites the limitation "**a third DC output voltage**" (in line 4). There is insufficient antecedent basis for this limitation in the claim. For example:

No "**second DC output voltage**" is claimed. It would be unclear to one having ordinary skill in the art how many *output voltages* are intended to be claimed.

21. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "**a reverse direction**" (in line 3). For example:

It would be unclear to one having ordinary skill in the art from what direction the "**reverse direction**" is intended to be "**reversed**."

22. Any remaining claims are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon rejected base claims.

23. Claims 10, 12, 13, and 16-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As a courtesy to the Applicant, the examiner has attempted to also make rejections over prior art -- based on the examiner's best guess interpretations of the invention that the Applicant is intending to claim.

However, the indefinite nature of the claimed subject matter naturally hinders the Office's ability to search and examine the application.

Any instantly distinguishing features and subject matter that the Applicant considers to be absent from the cited prior art is more than likely a result of the indefinite nature of the claims.

The Applicant is respectfully requested to correct the indefinite nature of the claims, which should going forward result in a more precise search and examination.

Double Patenting

24. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

25. Claims 10, 12, 13, and 16-24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of **U.S. Patent No. 6,275,208**.

Although the conflicting claims are not identical, they are not patentably distinct from each other.

Presently pending claims, and **U.S. Patent No. 6,275,208**'s claims recite such subject matter as *an apparatus comprising: a transformer including a primary coil and a first secondary coil coupled to the primary coil by magnetic induction; a switch connected to the primary coil; a first rectifier circuit connected to the primary coil to generate a first DC output voltage and disconnected from the first secondary coil, and a second rectifier circuit connected to the first secondary coil to generate a second DC output*.

The instant invention does not explicitly recite, for instance, the use of a *liquid crystal display panel with the DC/DC converter*; as is claimed by **U.S. Patent No. 6,275,208**. However, presently pending claims are a broader version of **U.S. Patent No. 6,275,208**'s claims. **U.S. Patent No. 6,275,208**'s claims include all the limitations found in presently pending claims. Thus, presently pending claims cover all the subject of **U.S. Patent No. 6,275,208**'s claims.

Claim Rejections - 35 USC § 102

26. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

27. Claims 10, 12, 13, and 16-24 are rejected under 35 U.S.C. 102(b) as being anticipated by ***Clark et al (US 4,323,957 A)***.

Regarding claim 10, ***Clark*** discloses

an apparatus [*e.g., Fig. 1; 10*] comprising:

a transformer [*e.g., Fig. 1; 16*] including

a primary coil [*e.g., Fig. 1; 16a*] and

a first secondary coil [*e.g., Fig. 1; 16b*] coupled to the primary coil by magnetic induction

(*see the entire document, including Column 1, Line 59 - Column 2, Line 6*);

a switch [*e.g., Fig. 1; 24*] connected to the primary coil (*see the entire document, including Column 2, Lines 27-38*);

a first rectifier circuit [*e.g., Fig. 1; 60, 80*] connected to the primary coil to generate a first DC output voltage [*e.g., Fig. 1; V(t)*] and disconnected [*e.g., Fig. 1; via transistors 62, 72 being switched off*] from the first secondary coil (*see the entire document, including Column 3, Lines 12-44*), and

a second rectifier circuit [e.g., Fig. 1; 44 & the unlabeled capacitor connected between diode 44 and voltage $+V_3$] connected to the first secondary coil to generate a second DC output [e.g., Fig. 1; $+V_3$] (see the entire document, including Column 2, Lines 7-26).

Regarding claim 12, **Clark** discloses

the first rectifier circuit comprises

a first diode [e.g., Fig. 1; 60] and a first capacitor [e.g., Fig. 1; 80] (see the entire document, including Column 3, Lines 12-44) and wherein

the second rectifier circuit comprises a second diode [e.g., Fig. 1; 44] and a second capacitor [e.g., Fig. 1; the unlabeled capacitor connected between diode 44 and voltage $+V_3$] (see the entire document, including Column 2, Lines 7-26).

Regarding claim 13, **Clark** discloses

an inductor [e.g., Fig. 1; 20] that is coupled across the primary coil and coupled to the first rectifier circuit (see the entire document, including Column 2, Line 56 - Column 3, Line 11).

Regarding claim 16, **Clark** discloses

the first rectifier circuit comprises

a first diode [e.g., Fig. 1; 60] and a first capacitor [e.g., Fig. 1; 80] (see the entire document, including Column 3, Lines 12-44) and wherein

the second rectifier circuit comprises a second diode [e.g., Fig. 1; 44] and a second capacitor [e.g., Fig. 1; *the unlabeled capacitor connected between diode 44 and voltage +V₃*] (see the entire document, including Column 2, Lines 7-26).

Regarding claim 17, **Clark** discloses
an input voltage port [e.g., Fig. 1; 12] that is connected to the primary coil
to provide an externally provided DC input voltage [e.g., Fig. 1; +V₁] to the primary coil
(see the entire document, including Column 1, Line 59 - Column 2, Line 6).

Regarding claim 18, **Clark** discloses
an input voltage port [e.g., Fig. 1; 12] that is connected to the primary coil
to provide an externally provided DC input voltage [e.g., Fig. 1; +V₁] to the primary coil
(see the entire document, including Column 1, Line 59 - Column 2, Line 6).

Regarding claim 19, **Clark** discloses
the transformer further comprises a second secondary coil [e.g., Fig. 1; *bottom half of 16b windings*] coupled in series to the first secondary coil [e.g., Fig. 1; *top half of 16b windings*]
and
coupled to the primary coil by magnetic induction, and
the apparatus further comprises
a third rectifier circuit [e.g., Fig. 1; 48 & *the unlabeled capacitor connected between diode 48 and voltage +V₄*] connected to the second secondary coil

to generate a third DC output voltage [e.g., Fig. 1; $+V_4$] (see the entire document, including Column 2, Lines 7-26).

Regarding claim 20, **Clark** discloses

a node [e.g., Fig. 1; the unlabeled ground node connected between diode 44 and voltage $+V_3$] between the first secondary coil and the second secondary coil has a fixed voltage (see the entire document, including Column 2, Lines 7-26).

Regarding claim 21, **Clark** discloses

the node between the first secondary coil and the second secondary coil is grounded [e.g., Fig. 1; the unlabeled ground node connected between diode 44 and voltage $+V_3$] (see the entire document, including Column 2, Lines 7-26).

Regarding claim 22, **Clark** discloses

each of the first [e.g., Fig. 1; 60, 80],
second [e.g., Fig. 1; 44 & the unlabeled capacitor connected between diode 44 and voltage $+V_3$], and
third [e.g., Fig. 1; 48 & the unlabeled capacitor connected between diode 48 and voltage $+V_4$]

rectifier circuits comprises a diode and a capacitor (see the entire document, including Column 2, Lines 7-26).

Regarding claim 23, **Clark** discloses

the diode [e.g., Fig. 1; 44] of the second rectifier circuit is connected in a forward direction from the first secondary coil, and

the diode [e.g., Fig. 1; 48] of the third rectifier circuit is connected in a reverse direction from the second secondary coil (*see the entire document, including Column 2, Lines 7-26*).

Regarding claim 24, **Clark** discloses

an inductor [e.g., Fig. 1; 16c] coupled in parallel to the primary coil and connected to the first rectifier circuit [e.g., Fig. 1; 60, 80] (*see the entire document, including Column 1, Line 59 - Column 2, Line 6*).

Claim Rejections - 35 USC § 103

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

29. Claims 13, 16, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Clark et al (US 4,323,957 A)** in view of **Liu et al (US 5,808,879 A)**.

Regarding claim 13, **Clark** discloses

an inductor [e.g., Fig. 1; 20] that is coupled across the primary coil and

coupled to the first rectifier circuit (*see the entire document, including Column 2, Line 56 - Column 3, Line 11*).

Should it be shown that **Clark** teaches an inductor coupled across the primary coil with insufficient specificity:

Liu discloses
an apparatus [*e.g., Fig. 2(a)*] comprising:
a transformer [*e.g., Fig. 2(a); T*] including
a primary coil [*e.g., Fig. 2(a); N_p*] and
a first secondary coil [*e.g., Fig. 2(a); N_s*] coupled to the primary coil by magnetic induction (*see the entire document, including Column 3, Lines 19-35*);
a switch [*e.g., Fig. 2(a); Q1*] connected to the primary coil;
a rectifier circuit [*e.g., Fig. 2(a); D, C_o*] connected to the first secondary coil to generate a DC output [*e.g., Fig. 2(a); V_o*];
an inductor [*e.g., Fig. 2(a); L_m*] coupled across the primary coil and
coupled to the rectifier circuit (*see the entire document, including Column 5, Lines 30-65*).

Clark and **Liu** are analogous art, because they are from the shared inventive field of DC-to-DC voltage converters.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place **Liu's** magnetizing inductor in parallel with **Clark's** primary coil, so as to, for example, reduce voltage stress on the switches, reduce EMI noise and switching losses,

obtain for the rectifying diode a low di/dt, as well as provide zero-voltage-switching (**Liu**:
Column 9, Lines 56-63).

Regarding claim 16, **Clark** discloses
the first rectifier circuit comprises
a first diode [e.g., Fig. 1; 60] and a first capacitor [e.g., Fig. 1; 80] (*see the entire document, including Column 3, Lines 12-44*) and wherein
the second rectifier circuit comprises a second diode [e.g., Fig. 1; 44] and a second capacitor [e.g., Fig. 1; the unlabeled capacitor connected between diode 44 and voltage +V₃] (*see the entire document, including Column 2, Lines 7-26*).

Regarding claim 24, **Clark** discloses
an inductor [e.g., Fig. 1; 16c] coupled in parallel to the primary coil and
connected to the first rectifier circuit [e.g., Fig. 1; 60, 80] (*see the entire document, including Column 1, Line 59 - Column 2, Line 6*).

Should it be shown that **Clark** teaches an inductor coupled in parallel to the primary coil with insufficient specificity:

Liu discloses
an apparatus [e.g., Fig. 2(a)] comprising:
a transformer [e.g., Fig. 2(a); T] including
a primary coil [e.g., Fig. 2(a); N_p] and

a first secondary coil [e.g., Fig. 2(a); N_s] coupled to the primary coil by magnetic induction (see the entire document, including Column 3, Lines 19-35);
a switch [e.g., Fig. 2(a); $Q1$] connected to the primary coil;
a rectifier circuit [e.g., Fig. 2(a); D , C_o] connected to the first secondary coil to generate a DC output [e.g., Fig. 2(a); V_o];
an inductor [e.g., Fig. 2(a); L_m] coupled in parallel to the primary coil and connected to the rectifier circuit (see the entire document, including Column 5, Lines 30-65).

Clark and **Liu** are analogous art, because they are from the shared inventive field of DC-to-DC voltage converters.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place **Liu's** magnetizing inductor in parallel with **Clark's** primary coil, so as to, for example, reduce voltage stress on the switches, reduce EMI noise and switching losses, obtain for the rectifying diode a low di/dt, as well as provide zero-voltage-switching (**Liu**: Column 9, Lines 56-63).

30. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Clark et al** (US 4,323,957 A) in view of *the Instant Application's Admitted Prior Art (the APA)*.

Regarding claim 20, **Clark** discloses

a node [e.g., Fig. 1; the unlabeled ground node connected between diode 44 and voltage $+V_3$] between the first secondary coil and the second secondary coil has a fixed voltage (see the entire document, including Column 2, Lines 7-26).

Regarding claim 21, **Clark** discloses

the node between the first secondary coil and the second secondary coil is grounded [e.g., Fig. 1; the unlabeled ground node connected between diode 44 and voltage $+V_3$] (see the entire document, including Column 2, Lines 7-26).

Regarding claim 22, **Clark** discloses

each of the first [e.g., Fig. 1; 60, 80],
second [e.g., Fig. 1; 44 & the unlabeled capacitor connected between diode 44 and voltage $+V_3$], and
third [e.g., Fig. 1; 48 & the unlabeled capacitor connected between diode 48 and voltage $+V_4$]
rectifier circuits comprises a diode and a capacitor (see the entire document, including Column 2, Lines 7-26).

Regarding claim 23, **Clark** discloses

the diode [e.g., Fig. 1; 44] of the second rectifier circuit is connected in a forward direction from the first secondary coil, and

the diode [e.g., Fig. 1; 48] of the third rectifier circuit is connected in a reverse direction from the second secondary coil (*see the entire document, including Column 2, Lines 7-26*).

Should it be shown that **Clark** teaches any of the above limitations with insufficient specificity:

The **APA** discloses

an apparatus [e.g., Fig. 4] comprising:

a transformer including

a primary coil [e.g., Fig. 4; T1, T3] and

a first secondary coil [e.g., Fig. 4; T2] coupled to the primary coil by magnetic induction;

a switch [e.g., Fig. 4; Q2] connected to the primary coil;

a first rectifier circuit [e.g., Fig. 4; D3, C3] connected to the primary coil to generate a first DC output voltage [e.g., Fig. 4; VDD] and disconnected from the first secondary coil, and

a second rectifier circuit [e.g., Fig. 4; D2, C2] connected to the first secondary coil to generate a second DC output [e.g., Fig. 4; Von];

a third rectifier circuit [e.g., Fig. 4; D4, C4] connected to the second secondary coil

to generate a third DC output voltage [e.g., Fig. 4; Voff]; wherein

a node between the first secondary coil and the second secondary coil has a fixed voltage;

the node between the first secondary coil and the second secondary coil is grounded;

each of the first, second, and third rectifier circuits comprises a diode and a capacitor;

the diode [e.g., Fig. 4; D2] of the second rectifier circuit is connected in a forward direction from the first secondary coil, and

the diode [e.g., *Fig. 4; D4*] of the third rectifier circuit is connected in a reverse direction from the second secondary coil (*see the entire APA, including Pages 3-4*).

Clark and the **APA** are analogous art, because they are from the shared inventive field of DC-to-DC voltage converters.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place the **APA's** forward/reverse diode direction rectifier circuit arrangement with **Clark's** apparatus, so as to, for example, generate voltages needed to drive a liquid crystal display (**APA: Page 2, Lines 16-17**).

Response to Arguments

31. Applicant's arguments filed 14 August 2008 have been fully considered but they are not persuasive.

The Applicant contends, "*Claims 10-18 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-14 of U.S. Patent No. 6,275,208. The conflicting '208 patent and the present application are commonly owned and Applicants have included herewith a terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) to overcome an actual or provisional rejection based on a nonstatutory double patenting ground*" (see Page 5 of the Response filed 14 August 2008).

However, to date, no terminal disclaimer has been submitted by the Applicant to the Office.

The Applicant contends, *"In regard to [the 35 U.S.C. 112, first paragraph rejection of] Claim 10, the Examiner indicated that the specification requires, 'The multiple output DC/DC voltage converter comprises a transformer having a primary coil applied with the input DC voltage and at least two more secondary coils' (page 5, line 10). Applicant respectfully submits that the specification provides examples of various embodiments of the present invention. The specification includes, 'There is shown and described only the preferred embodiments of the invention, but, as the aforementioned, it is capable of use in various other combinations and environments and is capable of changes or modification within the scope of the inventive concepts as expressed herein' (page 12, lines 21-24). The inventor is not required to set forth in the specification every manner of practicing his invention. He is required only to show the best mode known to him of utilizing the invention. Patent drafters sometimes refer to the description of a particular described use of the invention as a 'preferred embodiment'. As a general rule, the claims are not limited to the preferred embodiment, unless by their own language"* (see Page 6 of the Response filed 14 August 2008).

However, the examiner respectfully disagrees. Independent claim 10 recites, *"a transformer including a primary coil and a first secondary coil"* (see line 3). In contrast, the specification requires, *"The multiple output DC/DC voltage converter comprises a transformer having a primary coil applied with the input DC voltage and **at least two more secondary coils**"* (see page 5, line 10). The instant claim recites a single secondary coil (see line 3). Such subject matter was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention with a single secondary coil.

The Applicant contends, "*Claim 10 has been amended to recite 'a first rectifier circuit connected to the primary coil to generate a first DC output voltage and disconnected from the first secondary coil.'* In this regard, the Examiner indicated that Clark discloses a first rectifier 70 connected to the primary coil and a second rectifier 44 connected to the secondary coil. However, in contrast to Applicant's claimed subject matter, Clark disclose the output of the voltage suppression circuit 70 (first rectifier circuit) is connected to the secondary coil at point 36 as shown in Figure 1. In addition, the first rectifier circuit identified by the Examiner is disclosed by Clark to be a voltage suppression circuit 70 to prevent a voltage spike 94 from damaging the switching transistor 24. Such a voltage suppression circuit is fundamentally different in structure (relatively much more complicated) and function (voltage suppression) than the rectifier circuit disclosed by Applicant. As such, Applicant respectfully submits that Clark does not disclose first and second rectifier circuits as recited in Applicant's Claim 10" (see Page 7 of the Response filed 14 August 2008).

However, the examiner respectfully disagrees.

Clark discloses an apparatus [e.g., Fig. 1; 10] comprising:

a transformer [e.g., Fig. 1; 16] including

a primary coil [e.g., Fig. 1; 16a] and

a first secondary coil [e.g., Fig. 1; 16b] coupled to the primary coil by magnetic induction

(see the entire document, including Column 1, Line 59 - Column 2, Line 6);

a switch [e.g., Fig. 1; 24] connected to the primary coil (see the entire document, including Column 2, Lines 27-38);

a first rectifier circuit [e.g., Fig. 1; 60, 80] connected to the primary coil to generate a first DC output voltage [e.g., Fig. 1; $V(t)$] and disconnected [e.g., Fig. 1; *via transistors 62, 72 being switched off*] from the first secondary coil (*see the entire document, including Column 3, Lines 12-44*), and

a second rectifier circuit [e.g., Fig. 1; 44 & the unlabeled capacitor connected between diode 44 and voltage $+V_3$] connected to the first secondary coil to generate a second DC output [e.g., Fig. 1; $+V_3$] (*see the entire document, including Column 2, Lines 7-26*).

Applicant's arguments with respect to claims 10, 12, 13, and 16-24 have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571)272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
7 November 2008